

## IN PERSPECTIVE

### The Malta Energy Experience

Delegates to World Fuel Oil Summit III in Malta on May 27-29, 2010, were treated to a showing of “The Malta Experience”, Malta’s leading audio-visual attraction. As the show makes clear, the history of Malta is characterized by a variety of cultures and civilizations. While “The Malta Experience” highlighted the various aspects of Malta’s history, this issue’s “In Perspective” highlights various aspects of Malta’s energy scene. This “In Perspective” draws in part on speeches and presentations made at World Fuel Oil Summit III, organized by Axelrod Energy Projects and hosted by Enemalta Corporation.

#### Malta Government

In the Malta government’s welcoming address to World Fuel Oil Summit IV, Tonio Fenech, the minister of finance, stressed the inextricable link between the energy industry and the environment. The aim is the achievement of “sustainable development” in the context of the needs of society. Enemalta, the state-owned power company, relies mainly on imported fuel oil to generate the country’s electricity. The fuel oil is burned at the company’s two power plants — Delimara and Marsa.

Reflecting environmental concerns, Enemalta has taken ongoing steps to reduce  
*(See Malta Energy, page 11)*

## IN THE MARKETS

### Vast Bulk of Colombian Resid Moving to Far East (Directly and Indirectly)

When taking into account direct exports from Colombia and transshipment from the Caribbean, probably over three-quarters of Ecopetrol’s fuel oil exports are moving to the Far East. Ecopetrol, the state oil company of Colombia, exports four or five 60 kt cargoes (or 1.8-2.0 million barrels of fuel oil per month) from the port of Cartagena. Ecopetrol cargoes regularly move to Aruba for lightering and then to VLCCs for movement to the Far East. Ecopetrol’s fuel oil may be priced in reference to USGC 3%S or New York 1%S (as well as Rotterdam and Singapore HSFO quotes) depending on market conditions.

Ecopetrol’s fuel oil production will rise by 3 percent from 66 kb/d in 2009 to about 68 kb/d in 2010. All of the additional fuel oil produced will go for export, with exports thus rising from about 64 kb/d in 2009 to 66 kb/d in 2010. See the accompanying table.

Ecopetrol produces a blend of fuel oil

#### ECOPETROL, FUEL OIL PRODUCTION AND EXPORTS

*(Thousand Barrels Daily)*

	Production	Exports
2005	63	59
2006	67	64
2007	60	57
2008	67	62
2009	66	64
2010 E	68	66

E = Estimated.

from its 230 kb/d Barrancabermeja refinery, located several hundred kilometers inland in northern Colombia, and its 80 kb/d refinery at Cartagena, located on the Caribbean coast in northern Colombia. Barranca fuel oil moves by barge and pipeline to Cartagena. Approximately 30 kb/d of Barranca fuel oil flows by pipe and about 18 kb/d by barge.

*(See Colombian Fuel, page 13)*

## Panama Pacific Coast IFO Sales Rise Sharply in First Quarter 2010

On the back of higher Pacific coast IFO sales, the overall Panama IFO market witnessed a rise in IFO sales in first quarter 2010. Panama's total IFO sales ran 638 kt in the first quarter, up 110,000 mt from 528 kt in 2009. Pacific IFO sales jumped 30 percent to 472 kt while Atlantic IFO sales rose only 1 percent to 166 kt. With Panama's overall MDO sales falling 1 percent to 26 kt, the level of total bunker sales (IFO and MDO) in Panama rose 19 percent to 664 kt (see the accompanying table).

Reflecting sharply reduced bunkering on the Atlantic coast, Panama's IFO sales dipped 610 kt from 3.16 million mt in 2009 to 2.55 million mt. IFO sales on the Atlantic shrank 43 percent to 730 kt in 2010. IFO sales on the Pacific dropped only 3 percent to 1.82 million mt in 2010. With Panama's overall MDO sales 14 falling percent to 109 kt, the level of total bunker sales (IFO and MDO) slumped 19 percent to 2.66 million mt in 2010.

The number of ships served in

### PANAMA CANAL BUNKER SALES

	2008	2009	Jan-Mar 2009	Jan-Mar 2010
Total Ships Served	4,767	4,298	1,072	1,052
Total Barges and Tugs	259	256	66	65
Total Marine Fuel (metric tons)	3,291,129	2,662,942	556,185	663,978
Fuel Oil (metric tons)	3,163,907	2,553,472	528,297	638,421
Marine Diesel Oil (metric tons)	127,222	109,470	27,888	25,557
<b>PACIFIC</b>				
Ships Served	2,618	2,919	696	728
Barges and Tugs	134	160	41	41
Total Marine Fuel (metric tons)	1,942,932	1,900,734	382,536	491,680
Fuel Oil (metric tons)	1,881,840	1,823,743	364,151	472,352
Marine Diesel Oil (metric tons)	61,092	76,991	18,385	19,329
<b>ATLANTIC</b>				
Ships Served	2,149	1,379	376	324
Barges and Tugs	125	96	25	24
Total Marine Fuel (metric tons)	1,348,197	762,208	173,649	172,298
Fuel Oil (metric tons)	1,282,067	729,729	164,146	166,069
Marine Diesel Oil (metric tons)	66,129	32,479	9,503	6,229

Source: Panama Canal Authority.

Panama declined from 1,072 in first quarter 2009 to 1,052 in first quarter 2010. The number of ships served fell 10 percent to 4,298 in 2009. ■

## Malta Energy. . .

(Continued from page 1)

the sulfur content of the fuel oil burned in Malta. Up until 2003, both of Enemalta's power plants burned 3.5%S fuel oil. In 2003, Enemalta began experimenting with fuel oil of lower sulfur content and shifted to 2%S fuel oil. In 2004, a shift was made to 1%S fuel oil. In May 2008 the Delimara station shifted to 0.7%S fuel oil and as early as August 2010 both Maltese power plants will burn 0.7%S fuel oil.

Malta has embarked on two "ambitious" energy projects. The first is the construction of a new 144 MW plant at Delimara. The plant, which should be up and running by 2012, will be able to burn fuel oil or gasoil, and with a relatively small additional investment be modified to burn natural gas. The second project is the construction of a 200 MW direct electricity interconnection to Sicily. Ultimately, Malta will be connected to the European grid.

The government is also studying the possibility of a 140 MW offshore wind farm.

## Island Bunker Oils

Bunker sales in Malta have risen steadily since 2005, according to a presentation by Pippo Pandolfino of Island Bunker Oils (IBOL) at World Fuel Oil Summit III. In 2005, just over 678,000 metric tons were sold, in 2009 that total climbed to almost 1.15 million mt. Island is one of the two leading bunker suppliers in Malta. The accompanying table shows annual bunker sales in Malta.

IBOL offers low-sulfur and high-sulfur RMG 380 as well as 0.1%S MGO. Island offers max 1.5%S RMG 380 in line with EU Directive 2005/33/EC. The directive stipulates that passenger vessels

making regular calls at EU ports are restricted to 1.5%S max bunker fuel within territorial waters

### TOTAL BUNKER SALES IN MALTA

(Thousand Metric Tons)

2005	678
2006	729
2007	868
2008	904
2009	1,146

(defined as extending 12 nautical miles from shore). IBOL supplies bunkers both within and outside Malta's territorial waters. Vessels can also be supplied ex-pipe and by tank truck.

IBOL operates five double-hulled bunker barges, with sizes ranging from 2,817 mt dwt. to 10,628 mt dwt. As part of World Fuel Oil Summit III, delegates visited Island's largest bunker vessel, the 10,628 dwt Paradise Bay. The guided tour included above and below deck observation and discussion. The 2,817 dwt Salina Bay is currently chartered by ENI for use at La Spezia, Italy. See the accompanying table.

**ISLAND BUNKER OILS, BUNKER BARGES**

Ship	Deadweight
<i>(Metric Tons)</i>	
Paradise Bay	10,628
Xlendi Bay	6,585
Mistra Bay	3,290
Balluta Bay	2,817
Salina Bay	2,817

IBOL purchases fuel oil in lots ranging from 15-28 kt. Fuel for the Island operation is delivered, in part, to MOBC, where IBOL leases 29,000 cbm of storage from state-owned MOBC. Some fuel arrives via ship-to-ship transfer and via Oiltanking or Enemalta storage facilities. IBOL frequently splits cargo purchases with another local bunker supplier.

Established in 2002, Island Bunker is a private company with four shareholders each owning a 25 percent share.

**Horizon Terminals Limited**

During World Fuel Oil Summit III, Horizon Terminals Limited announced that it is in the process of obtaining permits to construct a new oil storage terminal in Malta. Work on the storage terminal is planned to begin in second-half 2011, with commercial operation to begin in second-half 2013. The terminal will have a total of 600,000 cubic meters of storage capacity, with a 50/50 clean/dirty breakdown. Tank sizes at the terminal are expected to be about 20,000 cbm. The entirety of the new Malta terminal's capacity will be dedicated to third-party storage. Horizon will operate the terminal.

As far as shipping logistics go, the terminal will have drafts of up to 22 meters. There will be one berth for vessels of up to 320,000 dwt. and two berths for vessels of up to 120,000 dwt. The

loading of barges will be possible, and thus clients would be to provide bunkers. While the breakwater for the Horizon terminal will be constructed just outside the port of Marsaxlokk, the actual terminal itself will be constructed in Benghajsa in the town of Bir ebbu a.

Horizon, which has fuel oil storage facilities in Singapore, Fujairah, Dubai, and Djibouti, is in the process of constructing a terminal with 190,000 cbm of fuel oil storage capacity in Morocco. Total storage capacity of the facility will be 503,000 cbm.

One of the speakers at World Fuel Oil Summit III, Waddah Ghanem of Emirates National Oil Company, the parent company of Horizon Terminals, discussed the environmental issues involved in terminal construction and operation. Mr. Ghanem noted various aspects of the environmental policy of ENOC/Horizon in the terminals business.

**Enemalta**

Enemalta recently awarded a term supply contract for 0.7%S fuel oil to Trafigura. Trafigura will supply 240,000 metric tons of 0.7%S max fuel oil from August 2010-January 2011. Supply will arrive in approximately 8 lots between August 2010 and January 2011. Vessels will discharge at two ports (Marsa and Delimara). Delimara has 200 meter LOA and 8.5 meter draft while Marsa has 180 meter LOA and 11.5 meter draft. Trafigura's 0.7%S fuel oil will be priced in reference to Platt's 1%S CIF Mediterranean quotations. The accompanying table shows Enemalta's 0.7%S specifications for the Trafigura contract.

Reflecting environmental considerations, state-owned Enemalta of Malta is shifting to a lower sulfur fuel oil slate. Starting in August, the Maltese power company will receive only 0.7%S fuel oil in lieu of the previous slate of both 1%S and 0.7%S. At present, Enemalta is supplied both 1%S and 0.7%S fuel oil by TOTAL of France on a term basis. The TOTAL contract runs from June 2009-June 2010. Over the contract period, TOTAL will provide about 540 kt of fuel oil of 0.7%S max and 308 kt of 1.0%S max fuel oil.

Earlier this year, Enemalta awarded a spot contract to Petrobras for the supply of 33 kt of 0.7%S fuel oil. Petrobras' vessel arrived in February and made a two-port discharge, delivering 18 kt of fuel oil for the Marsa power station and 15 kt for the Delimara power station. Marsa and Delimara power stations have an aggregate capacity of 571 MW. Marsa has generation capacity 267 MW,

**ENEMALTA'S 0.7% S FUEL OIL SPECIFICATIONS**

Property	Limit	Test Method
Density @15 °C	0.995 max	D 1298
Sulfur Content	0.7% max	D 1552
Flash Point	65 oC min	D 93
Pour Point	30 oC max	D 97
Ash Content (m/m)	0.1% max	D 482
Water by Distillation	1.0 max	D 95
Sediments by Extraction	0.15 max	D 473
Viscosity @ 50 oC	400 cSt max	D 445
Conradson Carbon (m/m)	15% max	D 524
Stability	2 max	D 4740
Asphaltenes (m/m)	7 % max	IP 143
HFT	0.1 max	IP 375
Vanadium ppm	100 max	D 5863/B
Nickel	report	D 5863/B
Aluminium + Silicon	report	IP 337
Sodium ppm	40 max	D 5863/B
Nitrogen (m/m)	To be reported	D 3228
Carbon Content %(m/m)	To be reported	D 5291
Net Heating Value	9,500 Kcal/kg min	D 240

including a 37 MW gas turbine and a 230 MW

**Colombian Resid. . .**

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**ECOPETROL REFINERIES**



**ECOPETROL, INTERNAL FLOWS OF FUEL OIL**

Streams	API Gravity (Degrees)	Viscosity (SSF at 50 C)	Volume (kb/d)
Barranca (By Pipeline)	6.5	55	30
Barranca (By Barge)	5.5	300	18
Cartagena	5.5	300	19
Total Blend	6.0	240	67

steam unit. Delimara has generation capacity 304 MW, including a 74 MW gas turbine, a 110 MW CCGT, and a 120 MW steam unit.

In response to higher electricity prices and the world economic recession Enemalta's fuel oil consumption has fallen in the recent past, according to a presentation at World Fuel Oil Summit III by Karl Camilleri of Enemalta. Enemalta's fuel oil consumption has fallen from over 600,000 mt in 2007 to about 500,000 mt in 2009.

**Conclusion**

The "Malta Energy Experience" includes a dynamic mix of oil storage, bunker fuel, and power generation.

The World Fuel Oil Summit will return to Malta, in the middle of the Mediterranean, on May 19-21, 2011. World Fuel Oil Summit IV will provide a fresh opportunity to appraise developments in the wider world fuel oil market as well as in Malta itself.

Mark your calendars! ■

**ECOPETROL, INTERNAL FLOWS OF FUEL OIL**

	Method	Min	Max	Typical Range	Units
API Gravity at 60° F	D-1298	5.5	—	5.5 – 6.7	API°
Flash Point	D-93	60	—	70 – 81	C°
Pour Point	D-97	—	15	-6 / -9.5	C°
Total Sulfur Content (%wt)	D-4294	—	1.75	1.5 – 1.6	%W
Vanadium	UOP-391	—	300	190 – 250	MG/KG
Viscosity (SSF at 50° C)	D-445	—	300	200 – 280	DGR
BSW	D-93, D-473	—	1	0.1 – 0.2	PCT/VOL
Sodium	D-5863	—	Report	30 – 34	MG/KG
Aluminum	D-5184	—	Report	28 – 32	MG/KG
Silicon	D-5184	—	Report	40 – 46.5	MG/KG
Asphaltenes	D-3279	—	Report	14 – 15.5	PCT/WT
Conradson Carbon Residue (CCR)	D-4530	—	Report	18 – 21	%W
Ash	D-482	—	Report	0.1 – 0.12	PCT/WT

About 19 kb/d of Cartagena fuel oil is used in the blend. See accompanying table on Ecopetrol's internal fuel oil flows.

Ecopetrol's fuel oil is guaranteed at 1.75% S maximum, but typically runs 1.5-1.6% S. Asphaltenes typically runs 14-15.5% wt and CCR runs 18-21 wt%. API gravity typically runs 5.5-6.7 degrees. See the accompanying table for Ecopetrol's fuel oil specifications.

In addition to fuel oil, Ecopetrol exports gasoline, diesel, and jet fuel from Cartagena. Ecopetrol is owned 90 percent by the Colombian government. ■